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**REMARKS**

After entry of the present Amendment, claims 1, 4-12, 15-27, and 36-41 remain in the application with claims 1 and 12 in independent form. More specifically, claim 1 has been amended to incorporate the elements of claims 2-3. Similarly, claim 12 has been amended to incorporate the elements of claims 13-14. Claims 2-3 and 13-14 have been cancelled. Claims 28-35 have been cancelled as drawn to a non-elected group in response to a Restriction Requirement. Claims 4 and 15 have been amended for dependency, and claim 21 has been amended to correct an inadvertent grammatical error. Claims 5-11, 16-20, and 22-27 remain unchanged. Claims 36-41 have been added by this Amendment.

Relative to new claims 36-41, there is full support in the specification as originally filed. Specifically, support for these new claims can be found at page 4, paragraph [0008], and page 5, paragraph [0010], as well as throughout the specification of the application. Thus, no new matter has been introduced.

Claims 1-2, 5-7, 12-13, 16-18, and 22 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Hahn et al. (United States Patent No. 5,985,943). The Applicants respectfully assert that, in view of the amendments to claims 1 and 12, this rejection is overcome. Specifically, the Examiner correctly recognized that Hahn et al. fails to disclose, teach, or suggest the specific polymeric wax claimed in original dependent claim 3, and also in original dependent claim 14, of the present application. The elements of claim 3 have been incorporated into claim 1, and the elements of claim 14 have been incorporated into claim 12 in order to overcome the 35 U.S.C. § 102(b) rejection over Hahn et al.

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Claims 1-7 and 12-22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hahn et al. in view of Great Britain Patent Specification No. 1,012,277 (hereinafter "the British document"). The Applicants respectfully assert that the Examiner has not established the requisite *prima facie* case of obviousness and, therefore, traverses this rejection.

Independent claim 1 focuses on a method for producing an expanded polystyrene bead having a coating. The method of producing the expanded polystyrene bead comprises the steps of providing an expandable polystyrene bead having a first surface area and including polystyrene and at least one blowing agent, expanding the expandable polystyrene bead to produce the expanded polystyrene bead having a second surface area that is greater than the first surface area, and applying a coating comprising a polymeric wax formed from monomers having from 1 to 8 carbon atoms to the second surface area to reduce the abrasiveness of the expanded polystyrene bead. Independent claim 12 has similar scope to claim 1 but focuses on a method for producing an expanded polystyrene foam article that is formed from a plurality of the expanded polystyrene beads, and also encompasses the possibility of applying the coating to an outer surface of the polystyrene foam article.

As the Examiner is aware, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the reference itself or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Third, the prior art reference must teach or suggest all the claim

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limitations. See *MPEP 2142 and 2143*. Notably, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on Applicant's disclosure.<sup>1</sup> This last principle is commonly referred to as impermissible hindsight. MPEP 2142 mandates that "...impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art."

**Rejections Under 35 U.S.C. § 103(a) Over Hahn et al. in View of the British Document**

Relative to the combination of Hahn et al. with the British document, the Applicants respectfully assert that the Examiner has failed to satisfy both the first criterion, i.e., a suggestion or motivation to combine the teachings of Hahn et al. with the British document, and the second criterion, i.e., an expectation of success, required to appropriately establish the *prima facie* case of obviousness. More specifically, the Applicants respectfully assert that the Examiner has engaged in impermissible hindsight in finding a motivation to combine Hahn et al. with the British document and that there would be no expectation of success in either Hahn et al. or the British document even if the stated combination were made.

The cases of *In re Sang Su Lee*<sup>2</sup> and *Princeton Biochemicals, Inc. v. Beckman Coulter, Inc.*<sup>3</sup> clarify the law and the Examiner's responsibilities relative to the first criterion. In short, *In re Sang Su Lee* emphasizes that an Examiner must show "some objective teaching in the prior art or that knowledge generally available to one of ordinary

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<sup>1</sup> *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q. 2d 1438 (Fed. Cir. 1991).

<sup>2</sup> 277 F.3d 1338 (Fed. Cir. 2002).

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skill in the art would lead [an] individual to combine the relevant teachings of the references.” *In re Sang Su Lee* at 1343.

The more applicable and more recent case, *Princeton*, is discussed in greater detail immediately below. In June of 2005, the Court of Appeal for the Federal Circuit (CAFC) reiterated the principles involved in assessing the differences between the prior art and the claimed invention when addressing the first criterion...in the subject application, the motivation to combine Hahn et al. with the British document. See *Princeton*. In *Princeton*, citing *Ruiz v. A.B. Chance Co.*, 357 F.3d 1270, 1275 (Fed. Cir. 2004), the CAFC emphasized that a rejection under 35 U.S.C. § 103 specifically requires consideration of the claimed invention “as a whole.” Relating to this “as a whole” issue, the CAFC went further to emphasize that

[i]nventions typically are new combinations of existing principles or features. *Envtl. Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 698 (Fed. Cir. 1983) (noting that “virtually all [inventions] are combinations of old elements”). The “as a whole” instruction in title 35 prevents evaluation of the invention part by part. *Ruiz*, 357 F.3d at 1275. Without this important requirement, an obviousness assessment might successfully break an invention into its component parts, then find a prior art reference corresponding to each component. *Id.* This line of reasoning would import hindsight into the obviousness determination by using the invention as a roadmap to find its prior art components. Further, this improper method would discount the value of combining various existing features or principles in a new way to achieve a new result – often the essence of the invention. *Id.*

Contrary to this reasoning, section 103 requires assessment of the invention as a whole. *Id.* This “as a whole” assessment of the invention requires a showing that an artisan of ordinary skill in the art at the time of the invention, confronted by the same problems as the invention and with no knowledge of the claimed invention, would have selected the various

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<sup>3</sup> 411 F.3d 1332 (Fed. Cir. 2005).

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elements from the prior art and combined them in the claimed manner. *Id.* In other words, section 103 requires some suggestion or motivation, before the invention itself, to make the new combination. (emphasis added).

**Motivation to Combine Hahn et al. and the British Document**

In relation to the elements claimed in amended independent claims 1 and 12, the Examiner relies on Hahn et al. for teaching application of a polymeric wax to an expanded polystyrene bead. The Examiner correctly recognizes that Hahn et al. does not at all disclose, teach, or suggest applying a polyethylene wax and, more broadly, a polymeric wax formed from monomers having from 1 to 8 carbon atoms as the polymeric wax. To supplement the deficiencies of the disclosure and teachings of Hahn et al., the Examiner then relies, in error, on the teachings of the British document. Simply stated, there is no suggestion or motivation to combine Hahn et al. with the British document as the Examiner has done.

The Examiner provides no rationale whatsoever as to what would motivate one of skill in the art to supplement the deficiencies of Hahn et al. with the disclosure of the British patent, except to erroneously state that the British document teaches that polyethylene wax is equivalent to paraffin wax. This is simply not the case. Referring to the first page, second column, line 71 to line 75, the British document merely provides a list of waxes, including paraffin wax, but not polyethylene wax, that are suitable for purposes of the invention disclosed in the British document. Importantly, the British document separately highlights polyethylene wax as providing excellent results, to the exclusion of the other waxes

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including paraffin wax. As such, the British document does not teach polyethylene wax as an equivalent to paraffin wax, but as superior to the paraffin wax.

More importantly, Hahn et al. specifies preferable hydrophobicizing agents as having 10 to 30 carbon atoms in the carbon chain, which clearly excludes polyethylene wax and even further indicates that polyethylene wax is not an equivalent of the paraffin wax that is used in Hahn et al.

Further, the purposes for including the wax in the expandable polystyrene are different for Hahn et al. and for the British document. Hahn et al. teaches including the paraffin wax as a hydrophobicizing agent for reducing water absorption capacity of the expandable polystyrene, whereas the British document teaches including the wax to either minimize the escape of a blowing agent within the expandable polystyrene or to decrease a cooling time for articles formed from the expandable polystyrene. In other words, the waxes are included in the expandable polystyrene for a completely different purpose in Hahn et al. than for the purposes in the British document. As such, one of skill in the art, when looking to Hahn et al. for reducing water absorption capacity of expandable polystyrene, would have no motivation to look to the British document, which has purposes of minimizing escape of blowing agent or reducing cooling times for articles formed from the expandable polystyrene, to supplement the deficiencies of Hahn et al. as they relate to independent claims 1 and 12 of the present application.

Likewise, no motivation exists to supplement the deficiencies of the British document, as to the failure of the British document to disclose applying the wax to expanded

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polystyrene, for the same reasons as set forth above, i.e., due to the different purposes in Hahn et al. and the British document for including the wax in the expandable polystyrene.

The finding by the Examiner of a motivation to combine Hahn et al. and the British document is the result of breaking apart the invention, as claimed in amended claims 1 and 12, and employing pure hindsight to find the component parts of the claims which, as reiterated by the Court of Appeals for the Federal Circuit in *Princeton*, is impermissible as a basis for finding a motivation to combine references.<sup>4</sup>

For the Examiner to reach a proper determination under 35 U.S.C. § 103:

The examiner must step backward in time and into the shoes worn by the hypothetical "person of ordinary skill in the art" when the invention was unknown and just before it was made. In view of all factual information, the examiner must then make a determination whether the claimed invention "as a whole" would have been obvious at that time to that person. Knowledge of applicant's disclosure must be put aside in reaching this determination, yet kept in mind in order to determine the "differences," conduct the search and evaluate the "subject matter as a whole" of the invention. The tendency to resort to "hindsight" based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art.

**Expectation of Success as a Result of Combining Hahn et al. and the British Document**

In addition to the absence of a motivation to combine the teachings of Hahn et al. with the teachings of the British document, there would be no expectation of success in the prior art even if such a combination was made. As set forth above, the waxes are included in the expandable polystyrene for a completely different purpose in Hahn et al. than for the

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<sup>4</sup> The courts have also indicated that it is impermissible to use the inventor's disclosure as a road map for *selecting* and combining prior art disclosures.

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purposes in the British document. As also set forth above, Hahn et al. specifies preferable hydrophobicizing agents as having 10 to 30 carbon atoms in the carbon chain, which clearly excludes polyethylene wax. As such, there would simply be no expectation of success as to the desired results in Hahn et al. by using the waxes disclosed in the British document in place of the paraffin wax that is disclosed in Hahn et al. The British document, although listing paraffin wax as suitable for use in that invention, highlights polyethylene wax as a more preferred wax for purposes of the that invention, i.e., in order to prevent the escape of blowing agent and to decrease cooling time. The British document makes no mention whatsoever of the wax being included for decreasing moisture absorption capacity of the expandable polystyrene beads. As such, the prior art does not teach polyethylene wax as suitable for decreasing moisture absorption capacity of the expandable polystyrene beads and, thus, no such expectation of success can be found in the prior art.

Conversely, there would also be no expectation of success in the British document by applying the wax to the expanded polystyrene. More specifically, since one of the purposes of including the wax in the expandable polystyrene of the British document is to minimize the escape of the blowing agent, there would certainly be no expectation of success to accomplish that purpose by applying the wax after expanding the expandable polystyrene in the British document, when most if not all of the blowing agent has already escaped from the polystyrene. Further, there is no indication that applying the wax to expanded polystyrene would decrease cooling time, as also desired in the British document.



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In view of the foregoing, the Examiner's further rejections of claims 8-11 and 23-27 are moot since those rejections also rely on the combination of Hahn et al. and the British document.

In summary, the Examiner's rationale for combining the references is insufficient and therefore inappropriate. There are no legitimate suggestions, teachings, or motivations within the cited references for combining the cited references. Furthermore, even were a sufficient motivation to make the combination found, there would be no expectation of success that such a combination would indeed satisfy the stated purposes of either of the references. As such, the Examiner cannot establish a *prima facie* case of obviousness relative to independent claims 1 and 12 of the present application.

Even further, relative to the specifics claimed in new claims 36-41, there is no disclosure, teaching, or suggestion in the prior art of the unexpected and advantageous results of contacting a product surface or packaging a product including the product surface with either the expanded polystyrene beads or with an article formed from the expanded polystyrene beads that have been coated in accordance with the present invention.

In view of the amendments to claims 1 and 12 as well as the remarks set forth above, it is respectfully submitted that the § 102(b) rejection has been overcome and that the § 103(a) rejections of amended independent claims 1 and 12 is improper and must be withdrawn. At least the first and second criteria for the requisite *prima facie* case of obviousness are not established. Thus, claims 1 and 12 are in condition for allowance.

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Furthermore, the remaining claims depend either directly or indirectly from the novel and non-obvious features of these independent claims such that these claims are also allowable.

This application is now presented in condition for allowance and such allowance is respectfully solicited. The Commissioner is authorized to charge our deposit account no. 08-2789 for any additional fees or credit the account for any overpayment.

Respectfully submitted,  
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